



## ***REGARDS: The REasons for Geographic And Racial Differences in Stroke Study***

### **Summary**

This jointly funded NASA & National Institute of Health project is focused on providing information to decision makers about associations between living environment and blood pressure in a large national cohort study. We provided access to specific information currently unavailable, assessing living environment in a national cohort, providing a foundation for decisions to be guided in new directions. With the addition of the NASA information, the associations between living environment and blood pressure can allow decision makers and those developing policies to assess the impact of alternative approaches to optimize the public health management of blood pressure among people living in different environments. While the current effort is focused specifically on living environment, success in these efforts can be quickly and directly generalized to other environmental exposures, and applied to a variety of public health outcomes, thus increasing access by decision makers working in other domains to currently unavailable unique NASA data.

In this project, we addressed this shortcoming by the merger of NASA environmental remote sensing data with national health data. The resulting system will provide an enriched opportunity for public health decision makers and end-user groups across the conterminous US to better address health issues introduced by living environment.

### **Societal Benefits**

The primary benefits and socioeconomic impact will result from the use of the new data and research results by public health policy and decision makers and the medical community. This study provided improved data on living environment; however, it also served as an example of how NASA data products can be readily and easily incorporated into large national datasets. For example, studies have shown that the annual mortality cost from total suspended particulates to be over 1 billion dollars. Better public health data, such as results from linking fine particulates to national cohort data, will provide public health officials additional information to minimize the negative public health impacts of air pollution. Improved public alerts and information to help the public reduce exposure during air pollution events can reduce mortality and overall health costs from doctor and hospital visits.

Seasonal changes have been found to have an impact on public health, including an increased risk for stroke in winter months. Future plans include linking the data from the REGARDS cohort with land surface temperature and solar insolation datasets, which will provide unique opportunities to learn more about relationships between critical weather parameters and public health, which in turn can benefit the development of illness management plans that would reduce costs for health care. Heat is a common health stressor that needs further study and especially exacerbates chronic conditions such as Alzheimer and Parkinson's disease. Better data and research that leads to increased awareness for high risk groups provides an opportunity for guided intervention and fewer negative health consequences from environmental stressors.

#### **For more information about this project**

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#### **NASA APPLIED SCIENCES PROGRAM & PUBLIC HEALTH**

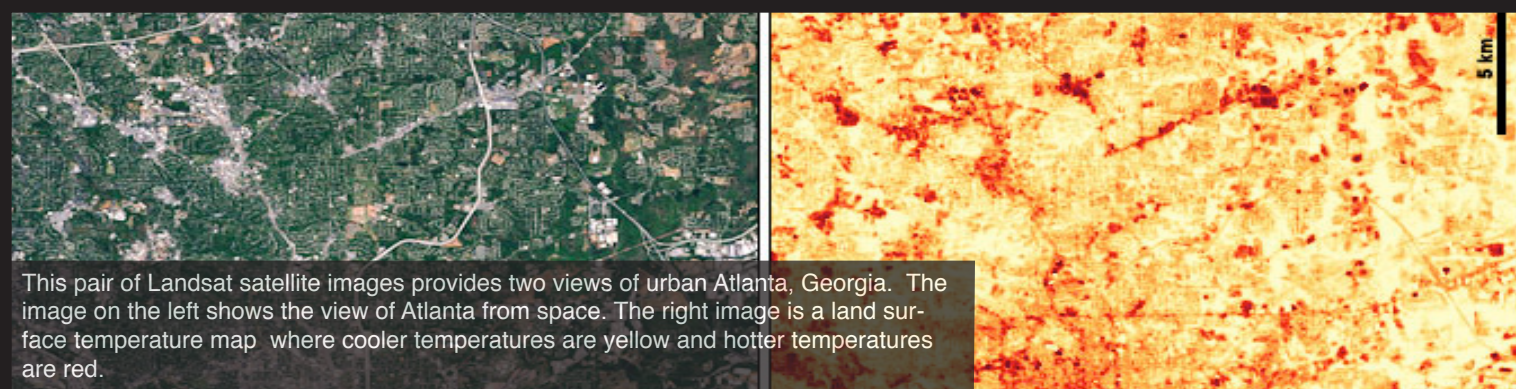
This application area focuses on the use of NASA assets to support planning and decision making for the public health, medical, and environmental health sectors. The application includes epidemiologic surveillance of infectious disease, environmental health, and emergency response and preparedness. Public Health also explores issues of toxic and pathogenic exposure, natural and man-made hazards for risk characterization and mitigation, and improvements to health and safety.

#### **Key Web sites**

**NASA Applied Science Public Health Page:**  
<http://nasascience.nasa.gov/earth-science/applied-sciences>



# REGARDS: Using NASA Land Cover Data to Track Public Health in Urban Areas



## Goals

Utilize land use and land cover classifications from the USGS National Land Cover Data set to determine the living environment (urban, suburban or rural) around each REGARDS participant's residence.

Determine land surface temperature at the time of and two weeks prior to the in-home visit for all participants.

Determine whether a relationship exists between living environment and blood pressure.

## Outcomes

A univariate relationship was found between living environment and blood pressure. Those living in urban areas are at highest risk for elevated blood pressure, followed by those in suburban areas, then rural residents.

Living environment is highly confounded with race, and thus the observed relationship can be explained by adjusting for race.